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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,877	11/17/2003	Wen-Jong Lin	51540/DBP/C982	5259
23363	7590	11/21/2007	EXAMINER	
CHRISTIE, PARKER & HALE, LLP			MOFFAT, JONATHAN	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/715,877	LIN ET AL.
	Examiner	Art Unit
	Jonathan Moffat	2863

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 15 August 2007.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-51 is/are pending in the application.
 - 4a) Of the above claim(s) 24-51 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-6, 11, 15, 16 and 20-23 is/are rejected.
- 7) Claim(s) 7-10, 12-14 and 17-19 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 17 November 2003 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892).
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 7/13/07, 11/17/03.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____.
- 5) Notice of Informal Patent Application
- 6) Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Group I, Species I (claims 1-23) in the reply filed on 8/15/2007 is acknowledged.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

In figure 10, the specification (page 16 line 31) mentions an item "S106" which does not appear in this figure.

Page 24 line 25 of the specification mentions an item label "202" which does not appear in figure 13.

In figure 2, item labels "S22" and "S66" are referred to as "S6" (specification page 7 line 21) and "S26" (specification page 7 line 23) respectively.

Item labels "44" and "46" in figure 7 are not mentioned in the specification.

Item label "U71" in figure 8B is referred to as "U72" in the specification page 15 line 35.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will

be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The abstract of the disclosure is objected to because it is in excess of 150 words and, in light of the election of claims 1-23, is no longer directed at the heart or gist of applicant's invention in a clear concise manner. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1.

Claims 1-4, 11 and 20-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Crow (US pat 5047966).

With respect to claim 1, Crow discloses a method comprising:

- 1) Providing shape data of the first portion of the workpiece (Figs 2 and Fig 4 “determine actual chord lengths”).
- 2) Providing shape data of a first template portion and a second template portion of a reference template, the first template portion corresponding to the first portion of the workpiece, and the second template portion corresponding to the second portion of the workpiece, the second template portion having a shape related to the shape to be determined for the second portion of the workpiece (Fig 4).

3) Determining the shape data of the second portion of the workpiece, based on the shape data of the first template portion and the second template portion of the reference template and the shape data of the first portion of the workpiece (Fig 4 item “Predict next point...”).

With respect to claim 2, Crow discloses generating surface shape data for the second portion of the workpiece based on the determined shape data of the second portion of the workpiece (Fig 4).

With respect to claim 3, Crow discloses calculating a target set of offsets (Fig 4, “deviations”).

With respect to claim 4, Crow discloses using the target set of offsets with the shape data of the first portion of the workpiece (Fig 4, “predict next point by...”).

With respect to claim 11, Crow discloses calculating a first set of offsets, between the shape data of the first template portion of the reference template and the first portion of the workpiece (Fig 4, “find chord length deviation”), and determining the shape data of the second portion of the workpiece further comprises using the target set of offsets and the shape data of the second template portion of the workpiece to determine the shape data of the second portion of the workpiece (Fig 4, “Predict next point...”).

With respect to claims 20-21, Crow discloses a turbine blade (Fig 1 item 14).

With respect to claim 22, Crow discloses that the workpiece is a deformed version of the reference template (Background, as the actual differs from the model parameters it is “deformed” from the ideal and desired shape due to imperfect manufacture).

With respect to claim 23, Crow discloses that the workpiece has a surface with a complex curve and the shape data on the second portion of the workpiece comprises data on said complex curve (Fig 1 item 14).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6, 11 and 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Therrien (US pat 5288209) in view of Randolph (US pat 6453211).

With respect to claim 1, Therrien discloses a method comprising:

1) Providing shape data of the first portion of the workpiece (column 3 lines 1-4).
2) Providing shape data of a first template portion and a second template portion of a reference template, the first template portion corresponding to the first portion of the workpiece, and the second template portion corresponding to the second portion of the workpiece, the second template portion having a shape related to the shape to be determined for the second portion of the workpiece (column 3 lines 4-14).

3) Determining the shape data of the second portion of the workpiece, based on the shape data of the first template portion and the second template portion of the reference template and the shape data of the first portion of the workpiece (column 3 lines 6-9). In this situation, the stored model data for a "bad region" to be worked on is modified by measurements of the "good region" of the blade to adapt the tool path.

With respect to claim 2, Therrien discloses generating surface shape data for the second portion of the workpiece based on the determined shape data of the second portion of the workpiece (column 3 lines 4-14).

With respect to claim 3, Therrien discloses calculating a target set of offsets (column 3 lines 4-6).

With respect to claim 4, Therrien discloses using the target set of offsets with the shape data of the first portion of the workpiece (column 3 lines 4-9).

With respect to claim 5, Therrien discloses adding the target set of offsets to the shape data of the first portion of the workpiece (column 6 lines 25-50).

With respect to claim 6, Therrien discloses creating a tool path based upon points from a data file (column 36-14). Therrien further discloses a reference point on the blade component from which other locations are derived (column 4 lines 10-15). The examiner believes that one of ordinary skill in the art would understand that, in such a tooling program, points are determined as offsets from both a reference point (coordinates of the point) and as an offset from one point to the next (path data, i.e. how much to move in each direction to arrive at a subsequent point). The examiner believes that with this interpretation, offset data is calculated (albeit perhaps on the fly) between adjacent points and portions.

With respect to claim 11, Therrien discloses calculating a first set of offsets, between the shape data of the first template portion of the reference template and the first portion of the workpiece (column 3 lines 4-6), and determining the shape data of the second portion of the workpiece further comprises using the target set of offsets and the shape data of the second

template portion of the workpiece to determine the shape data of the second portion of the workpiece (column 3 lines 4-9).

With respect to claims 20-21, Therrien discloses a turbine blade (Fig 1).

With respect to claim 23, Therrien discloses that the workpiece has a surface with a complex curve and the shape data on the second portion of the workpiece comprises data on said complex curve (Fig 1).

With respect to claim 1, Therrien fails to disclose that the first and second (good and bad) regions of the workpiece are the result of a repair to the blade. Although this is not called out in the first claim, it is somewhat crucial for the concept of the invention. With respect to claim 22, although an incomplete grinding (bad region) is a "deformed" version of ideal, again this is not a damaged and subsequently repaired blade as appears to be the thrust of the invention.

Randolph teaches, with respect to claims 1 and 22, the machining of a blade as part of a repair procedure of a deformed and welded blade (Fig 3).

It would have been obvious to one of ordinary skill in the art to modify the method of Therrien by applying it to repair work of damaged blades. Therrien indicates that such a method is an improvement upon a "simple alignment solution" (column 2 lines 1-53) which is exactly how Randolph approaches this problem.

3.

Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Therrien and Randolph as applied to claim 1 above, and further in view of Pekarek (US pat 4908782).

With respect to claims 15-16, Therrien and Randolph fail to disclose determining neutral line data for the reference component and workpiece.

Pekarek teaches, with respect to claim 15, calculating neutral lines of the first and second portions of the reference template and of the first portion of the workpiece based on their shape data (Fig 8 item 160, called a "mean contour/camber line").

Pekarek teaches, with respect to claim 16, determining the neutral line of the second portion of the workpiece, based on the neutral lines of the first and second portions of the reference template and of the first portion of the workpiece (Figs 10-14).

It would have been obvious to one of ordinary skill in the art to modify the method of Therrien and Randolph by using calculated neutral lines to align a modeled and measured airfoil component in simulation as taught by Pekarek. This would allow the system to determine deviations from ideal compensating for a misalignment or positional difference which may result from the placement of the component in the sensing apparatus (column 1 lines 52-65).

Examiner's Comments

As it appears to the examiner to be a crucial component of what applicant has disclosed as the present invention; the examiner believes that claim 1 should be amended to include reference to a blade as in claim 20 and to repair, reworking, or tooling of some sort unless the applicant believes that other embodiments are sufficiently enabled and shown in the specification.

Conclusion

Claims 7-10, 12-14 and 17-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Moffat whose telephone number is (571) 272-2255. The examiner can normally be reached on Mon-Fri, from 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

11/15/07

JM *[Signature]*

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